

# TEXAS DEPARTMENT OF INSURANCE

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## PRODUCT EVALUATION RC-291

Effective July 1, 2011

*The following product has been evaluated for compliance with the wind loads specified in the **International Residential Code (IRC)** and the **International Building Code (IBC)**. This product shall be subject to reevaluation **June 2015**.*

*This product evaluation is not an endorsement of this product or a recommendation that this product be used. The Texas Department of Insurance has not authorized the use of any information contained in the product evaluation for advertising, or other commercial or promotional purpose.*

*This product evaluation is intended for use by those individuals who are following the design wind load criteria in Chapter 3 of the IRC and Section 1609 of the IBC. The design loads determined for the building or structure shall not exceed the design load rating specified for the products shown in the limitations section of this product evaluation. This product evaluation does not relieve a Texas licensed engineer of his responsibilities as outlined in the Texas Insurance Code, the Texas Administrative Code, and the Texas Engineering Practice Act.*

## **BASF Corporation FE348 Series and Elastospray 81000 Series Coated Foam Plastic Roof Covering Systems** manufactured by

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is acceptable in designated catastrophe zones along the Texas Gulf Coast when installed in accordance with the manufacturer's installation instructions and this product evaluation.

## PRODUCT DESCRIPTION

The BASF Corporation FE348 Series and Elastospray 81000 Series Coated Foam Plastic Roof Covering Systems consist of liquid applied coatings over spray-applied polyurethane foam (SPF) plastic insulations. This report includes the following insulation systems:

FE348 Series:	ELASTOSPRAY®Series:
FE348-2.5	ELASTOSPRAY® 81255
FE348-2.8	ELASTOSPRAY® 81285
FE348-3.0	ELASTOSPRAY® 81305

**Roof Deck:** The spray-applied polyurethane foam systems may be applied to wood, concrete and steel substrates. Refer to the approved assemblies for description of acceptable substrates.

**Polyurethane Foam Plastic Insulation:** BASF Corporation FE348 Series (FE348-2.5, FE348-2.8 and FE348-3.0) are two-component, spray-applied foam plastic insulations complying with ASTM C 1029, and are produced in densities of 2.5, 2.8 and 3.0 pcf, respectively. The foam plastic ingredients (Component A and Component B) are available in 55-gallon containers and have a shelf life of 3-months when stored at temperatures between 50°F and 80°F.

BASF Corporation Elastospray 81000 Series (81255, 81285 and 81305) are two-component, spray-applied foam plastic insulations complying with ASTM C 1029, and are produced in densities of 2.5, 2.8 and 3.0 pcf, respectively. The foam plastic ingredients (Component A and Component B) are available in 55-gallon containers and have a shelf life of 3-months when stored at temperatures between 50°F and 80°F.

**Coatings:** The coatings recognized in this report for use in the BASF Corporation roofing systems are United Coatings Diathon acrylic roof coating, BASF FECoat 1000 acrylic coating, and BASF 3-5000 silicone roof coating.

United Coatings Diathon coating is a single component, liquid applied, 100 percent acrylic elastomeric coating. The coating is available in 5 gallon and 55 gallon containers. The coating complies with ASTM D 6083.

BASF FECoat 1000 acrylic coating is a single component, liquid applied, silicone rubber liquid coating, and is brush, roller or spray applied over the foam plastic insulation. The coating is available in 5 gallon and 55 gallon containers. The coating complies with ASTM D 6083.

BASF ELASTOCOAT 3-5000 silicone roof coating is a single component, liquid applied, 100 percent acrylic elastomeric coating. The coating is available in 5 gallon and 55 gallon containers. The coating complies with ASTM D 6694.

### **LIMITATIONS**

**Design Wind Pressures:** The BASF SPF systems, when installed in accordance with this evaluation report, shall have the allowable uplift wind pressure specified in each assembly.

**Roof Slope:** The roof decks shall have a minimum slope of  $\frac{1}{4}$ :12.

**Installation Over an Existing Roof Covering:** Installation of the BASF SPF systems over an existing roof covering is not within the scope of this evaluation report.

**Product Identification:** Each container of polyurethane foam plastic insulation bears a label with BASF Corporation name and address; the product name; the component type; the density; the shelf life; and the date of manufacture.

**Application Conditions:** Do not apply the BASF SPF systems if the ambient temperature is expected to fall below 50 degrees F or if rain is expected before the application has time to cure. The coating must not be applied when dew, condensation, precipitation or freezing temperatures are anticipated prior to completion of the coating application.

### **INSTALLATION INSTRUCTIONS**

**General:** All International Residential Code (IRC) and the International Building Code (IBC) requirements must be satisfied and manufacturer's installation instructions followed, unless otherwise specified by this product evaluation.

**Roof Deck:** The roof deck may be plywood, concrete and steel. The decks must be free of all grease, oil, loose particles, moisture and other foreign materials. Primers shall be applied in accordance with the manufacturer's installation instructions. All primers must be thoroughly dry and cured prior to foam application.

## WOOD DECK ASSEMBLIES

### Assembly No. 1:

**Design Pressure:** -97.5 psf

**Roof Deck:** Minimum  $\frac{19}{32}$ " thick plywood deck. The roof framing members (rafters or trusses) shall be spaced a maximum of 24" o.c.

**Insulation:** A minimum of  $\frac{1}{2}$ " Securock secured to the wood deck with #15 screws with 3" diameter metal plates. A minimum of 16 screws shall be provided for each 4'-0" x 8'-0" piece of insulation (1 per 2 square feet).

**Foam Application:** A minimum of 1" thickness of FE348-2.5, 2.8 and 3.0 series spray applied polyurethane over the insulation board. The polyurethane foam plastic insulation is applied in a 1:1 ratio by volume of the A and B components using foam spraying equipment recommended by BASF Corporation.

**Coating:** The coating must be one of the following:

- United Coatings Diathon applied in two coats at  $1\frac{1}{2}$ " gallons per 100 sf per coat.
- BASF FECoat 1000 applied in two coats at  $1\frac{1}{2}$ " gallons per 100 sf per coat.
- BASF ELASTOCOAT S-5000 series applied in two coats at  $1\frac{1}{2}$ " gallons per 100 sf per coat.

### Assembly No. 2:

**Design Pressure:** -105 psf

**Roof Deck:** Minimum  $\frac{19}{32}$ " thick plywood deck. The roof framing members (rafters or trusses) shall be spaced a maximum of 24" o.c.

**Anchor Sheet:** One ply of GAF GAFGLAS Stratavent perforated venting base sheet, primed and mechanically fastened to the primed wood deck. The sheet is fastened with  $1\frac{1}{4}$ " long galvanized ring shank nails and tin caps spaced 7" o.c. in a 4" lap and 7" o.c. in two staggered rows in the center of the sheet.

**Foam Application:** A minimum of 1" thickness of FE348-2.5, 2.8 and 3.0 series spray applied polyurethane over the insulation board. The polyurethane foam plastic insulation is applied in a 1:1 ratio by volume of the A and B components using foam spraying equipment recommended by BASF Corporation.

**Coating:** The coating must be one of the following:

- United Coatings Diathon applied in two coats at  $1\frac{1}{2}$ " gallons per 100 sf per coat.
- BASF FECoat 1000 applied in two coats at  $1\frac{1}{2}$ " gallons per 100 sf per coat.
- BASF ELASTOCOAT 3-5000 applied in two coats at  $1\frac{1}{2}$ " gallons per 100 sf per coat.

### **Assembly No. 3:**

**Design Pressure:** - 120 psf

**Roof Deck:** Minimum  $\frac{15}{32}$ " thick plywood deck. The roof framing members (rafters or trusses) shall be spaced a maximum of 24" o.c.

**Foam Application:** A minimum of 1" thickness of FE348-2.5, 2.8 and 3.0 series or Elastospray 81255, 81285 and 81305 series spray applied polyurethane over deck. The polyurethane foam plastic insulation is applied in a 1:1 ratio by volume of the A and B components using foam spraying equipment recommended by BASF Corporation.

**Coating:** The coating must be one of the following:

- United Coatings Diathon applied in two coats at  $1\frac{1}{2}$ " gallons per 100 sf per coat.
- BASF FECoat 1000 applied in two coats at  $1\frac{1}{2}$ " gallons per 100 sf per coat.
- BASF ELASTOCOAT S-5000 series applied in two coats at  $1\frac{1}{2}$ " gallons per 100 sf per coat.

### **Assembly No. 4:**

**Design Pressure:** - 105 psf

**Roof Deck:** Minimum  $\frac{15}{32}$ " thick plywood deck. The roof framing members (rafters or trusses) shall be spaced a maximum of 24" o.c.

**Insulation:** Two layers of Atlas ACFoam II totaling a minimum of 2.6 inches thick, fully adhered to the deck with FE 740 spray applied polyurethane adhesive  $1\frac{1}{4}$  gallons per 100 sf.

**Foam Application:** A minimum of 1" thickness of FE348-2.5, 2.8 and 3.0 series or Elastospray 81255, 81285 and 81305 series spray applied polyurethane over the deck. The polyurethane foam plastic insulation is applied in a 1:1 ratio by volume of the A and B components using foam spraying equipment recommended by BASF Corporation.

**Coating:** The coating must be one of the following:

- United Coatings Diathon applied in two coats at  $1\frac{1}{2}$ " gallons per 100 sf per coat.
- BASF FECoat 1000 applied in two coats at  $1\frac{1}{2}$ " gallons per 100 sf per coat.
- BASF ELASTOCOAT S-5000 series applied in two coats at  $1\frac{1}{2}$ " gallons per 100 sf per coat.

## **CONCRETE DECK ASSEMBLIES**

### **Assembly No. 5:**

**Design Pressure:** -187 psf

**Roof Deck:** Minimum 2500 psi primed structural concrete or plank deck.

**Assembly No. 5 (continued):**

**Foam Application:** A minimum of 1" thickness of FE348-2.5, 2.8 and 3.0 series or Elastospray 81255, 81285 and 81305 series spray applied polyurethane over the insulation board. The polyurethane foam plastic insulation is applied in a 1:1 ratio by volume of the A and B components using foam spraying equipment recommended by BASF Corporation.

**Coating:** The coating must be one of the following:

- United Coatings Diathon applied in two coats at 1 ½" gallons per 100 sf per coat.
- BASF FECoat 1000 applied in two coats at 1 ½" gallons per 100 sf per coat.
- BASF ELASTOCOAT S-5000 series applied in two coats at 1 ½" gallons per 100 sf per coat.

**Assembly No. 6:**

**Design Pressure:** -495 psf

**Roof Deck:** Minimum 2500 psi primed structural concrete or plank deck.

**Foam Application:** A minimum of 1" thickness of FE348-2.8 and 3.0 series or Elastospray 81285 and 81305 series spray applied polyurethane over the insulation board. The polyurethane foam plastic insulation is applied in a 1:1 ratio by volume of the A and B components using foam spraying equipment recommended by BASF Corporation.

**Coating:** The coating must be one of the following:

- United Coatings Diathon applied in two coats at 1 ½" gallons per 100 sf per coat.
- BASF FECoat 1000 applied in two coats at 1 ½" gallons per 100 sf per coat.
- BASF ELASTOCOAT 3-5000 applied in two coats at 1 ½" gallons per 100 sf per coat.

**STEEL DECK ASSEMBLIES**

**Assembly No. 7:**

**Design Pressure:** - 105 psf

**Roof Deck:** Minimum 22 gauge, 80 ksi steel deck with 6 foot spans. The steel deck is secured to minimum ¼" steel supports with Traxx/5 fasteners spaced 6 inches o.c. (every rib). The side laps are secured with Traxx 1 fasteners spaced 24 inches o.c.

**Foam Application:** The deck flutes are filled with FE348-2.5, 2.8 and 3.0 series or Elastospray 81255, 81285 and 81305 series spray applied polyurethane. FE348-2.5, 2.8 and 3.0 series or Elastospray 81255, 81285 and 81305 series spray applied polyurethane is applied over the top of the ribs to a thickness of 1 inch. The polyurethane foam plastic insulation is applied in a 1:1 ratio by volume of the A and B components using foam spraying equipment recommended by BASF Corporation.

**Assembly No. 7 (continued):**

- Coating:** The coating must be one of the following:
- United Coatings Diathon applied in two coats at  $1\frac{1}{2}$  " gallons per 100 sf per coat.
  - BASF FECoat 1000 applied in two coats at  $1\frac{1}{2}$  " gallons per 100 sf per coat.
  - BASF ELASTOCOAT S-5000 series applied in two coats at  $1\frac{1}{2}$  " gallons per 100 sf per coat.

**Assembly No. 8:**

- Design Pressure:** - 75 psf
- Roof Deck:** Minimum 22 gauge, ASTM A 653/A653M-01 galvanized or A1008/A1008M-01a SS Grade 33 painted steel deck with maximum 6'-0" spans. The steel deck is secured to minimum  $\frac{1}{4}$  " steel supports with Traxx/5 fasteners spaced 6 inches o.c. (every rib). The side laps are secured with Traxx 1 fasteners spaced 24 inches o.c.
- Insulation:** A minimum of  $\frac{1}{2}$  " thick, 4'-0" x 4'-0" sheets of Securock secured to the wood deck with Trufast #14 screws with TruKFast MP metal plates at a rate of 1 per every 2 square feet.
- Foam Application:** The deck flutes are filled with FE348-2.5, 2.8 and 3.0 series or Elastospray 81255, 81285 and 81305 series spray applied polyurethane is applied over the insulation at a minimum thickness of 1 inch. The polyurethane foam plastic insulation is applied in a 1:1 ratio by volume of the A and B components using foam spraying equipment recommended by BASF Corporation.
- Coating:** The coating must be one of the following:
- United Coatings Diathon applied in two coats at  $1\frac{1}{2}$  " gallons per 100 sf per coat.
  - BASF FECoat 1000 applied in two coats at  $1\frac{1}{2}$  " gallons per 100 sf per coat.
  - BASF ELASTOCOAT 3-5000 applied in two coats at  $1\frac{1}{2}$  " gallons per 100 sf per coat.

**Assembly No. 9:**

- Design Pressure:** - 45 psf
- Roof Deck:** Minimum 22 gauge, painted steel deck with maximum 6'-0" spans.
- Foam Application:** The deck flutes are filled with FE348-2.5, 2.8 and 3.0 series or Elastospray 81255, 81285 and 81305 series spray applied polyurethane. FE348-2.5, 2.8 and 3.0 series or Elastospray 81255, 81285 and 81305 series spray applied polyurethane is applied over the top of the ribs to a thickness of 1 inch. The polyurethane foam plastic insulation is applied in a 1:1 ratio by volume of the A and B components using foam spraying equipment recommended by BASF Corporation.

**Assembly No. 9 (continued):**

- Coating:** The coating must be one of the following:
- United Coatings Diathon applied in two coats at 1 ½ " gallons per 100 sf per coat.
  - BASF FECoat 1000 applied in two coats at 1 ½ " gallons per 100 sf per coat.
  - BASF ELASTOCOAT 3-5000 applied in two coats at 1 ½ " gallons per 100 sf per coat.

**Assembly No. 10:**

**Design Pressure:** - 112.5 psf

**Roof Deck:** Minimum 22 gauge, Marlyn Type B deck, G-90 finish deck with 5 foot spans. The steel deck is secured to minimum ¼ " steel supports with #14 self drilling Tek screws, one located at each flute. The side laps are secured with #14 self drilling Tek screws spaced 6 inches o.c.

**Foam Application:** The deck flutes are filled with FE348-2.5, 2.8 and 3.0 series spray applied polyurethane. FE348-2.5, 2.8 and 3.0 series or Elastospray 81255, 81285 and 81305 series spray applied polyurethane is applied over the top of the ribs to a thickness of 1 inch. The polyurethane foam plastic insulation is applied in a 1:1 ratio by volume of the A and B components using foam spraying equipment recommended by BASF Corporation.

- Coating:** The coating must be one of the following:
- United Coatings Diathon applied in two coats at 1 ½ " gallons per 100 sf per coat.
  - BASF FECoat 1000 applied in two coats at 1 ½ " gallons per 100 sf per coat.
  - BASF ELASTOCOAT S-5000 series applied in two coats at 1 ½ " gallons per 100 sf per coat.

**Note:** The manufacturer's installation instructions shall be on the job site during the installation. All fasteners shall be corrosion resistant as specified in the International Residential Code (IRC), the International Building Code (IBC), and the Texas Revisions.